



Hornet repaired using laser additive deposition

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Defence and RUAG Australia have completed a program to develop and demonstrate Laser Additive Deposition (<http://www.australiandefence.com.au/defence/air/laser-tech-the-next-step-for-aircraft-repairs>) (LAD) as a technology for repairing damaged high strength steel components.

The technique was used for the full repair and return to service of an arrester hook from a RAAF F/A-18 Hornet, which had previously identified as worn 'beyond safe limits' due to operational activities. The full repair significantly improved the component's return-to-service time compared with the typical replacement options.

“ The full repair significantly improved the component's return-to-service time ”

LAD is an Additive Material Technology (AMT) which rebuilds damaged metal surfaces. A high power laser beam creates a melt pool in the surface. Metal particles are injected into the melt pool, and fuse with the surface as the surface cools and solidifies. Overlapping passes build a 3D deposition structure which can then be machined to

the required shape. LAD is applicable to the repair of high strength metal components and structures.

Defence has invested substantially into developing in-country LAD repair capability.

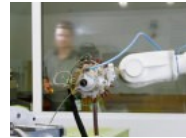
“Additive Material Technologies such as LAD are now critical to sustaining Defence's equipment in the air, land and sea environments,” Neil Matthews, Senior Manager for Advanced Technologies and Engineering Services, RUAG Australia, said.

“The long-term cost reductions are significant as the reliable repair of components lowers the overhead attributed to logistics and inventory.”

“To date, Defence and RUAG have recovered more than six million dollars of Defence equipment using additive material technologies,” Khan Sharp, Research Leader for Aerospace Materials Technologies, DSTG, said.

“Adding AMT to repair capabilities is essential in view of the advanced materials and innovative manufacturing techniques used in building RAAF's Joint Strike Fighter, for example.”

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